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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/509,429 | 09/24/2004 | Ludovic Noirie | Q82799 | 3427 |
| 23373 | 7590 | 11/28/2007 | | |
| SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037 | | | EXAMINER STAHL, MICHAEL J | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--------------------------------------|--|
| Office Action Summary | Application No. 10/509,429 | Applicant(s) NOIRIE ET AL. | |
| | Examiner Mike Stahl | Art Unit 2874 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 September 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16 is/are allowed.
- 6) ☒ Claim(s) 1-4 and 10-12 is/are rejected.
- 7) ☒ Claim(s) 5-9 and 13-15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

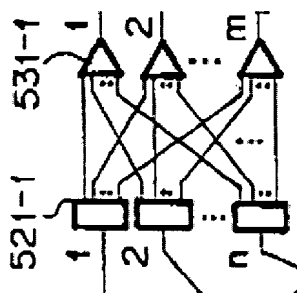
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4 and 10-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Shiragaki et al. (US 6115517).

Claim 1: Shiragaki discloses in fig. 5 a space cross-connect unit (SCCU) with N input ports and P output ports, comprising: a broadcast stage with N signal dividers **511-51n** each having one input and C outputs where C is an integer factor of P less than P, each input being connected to one of the N input ports **501-50n** so that each divider divides a signal received at one of the input ports into C signals at the C outputs, and a space switching stage comprising at most C space switching modules (a single module is regarded as including the set of elements **52i-j** and **53i-j** which are ultimately connected to a common multiplexer **56i** in fig. 5), the SCCU being characterized in that: the C space switching modules are non-blocking and non-broadcasting, and each module has N inputs and P/C outputs, said N inputs are connected to N outputs of the broadcast stage, each of those N outputs comes from a different divider **51i**, and each of the P/C outputs of the modules is connected to a respective one of the P output ports. In terms of the variables used in fig. 5, $N = n$, $P = m \times n$, $C = n$, and $P/C = m$. In this arrangement, the output ports of the SCCU are regarded as the collective outputs of the space switching modules identified above, prior to but not including the various elements **54i-j**. Because the Shiragaki SCCU as interpreted above contains the same structure as the recited invention, it is

inherent that it is operable to perform packet switching and circuit switching. Note MPEP 2112.01(I). Furthermore, the broadcasting of input signals to the output ports is independent of wavelength since the elements **50i**, **51i**, **52i-j**, and **53i-j** do not perform any wavelength-dependent operations. One space switching module as interpreted in this rejection is shown in the following crop:



This is the topmost space switching module in fig. 5. In total there are n (in terms of the reference's variable names) of them in the figure.

Claim 2: There are exactly N dividers **51i** and C modules.

Claim 3: Each of the C space switching modules includes means for connecting each of its N inputs to one of its P/C outputs.

Claim 4: Each of the C space switching modules is a non-blocking switch matrix with N inputs and P/C outputs.

Claim 10: The switching stage uses a technology based on lithium niobate (col. 20 lns. 35-38).

Claim 11: In the fig. 5 arrangement, each of the P/C outputs of the C modules is followed by a wavelength converter **55i-j**, which may be implemented as a semiconductor optical amplifier (col. 20 lns. 60-65).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shiragaki et al. (applied above).

Claim 12: Shiragaki does not show the input of each divider being preceded by an amplifier. The signals coming into the device at ports 50i were previously conducted along an optical network. See for example fig. 5, which shows a component corresponding to 101 of fig. 1 (col. 10 lns. 62-65). The complete fig. 1 apparatus is a node within the optical network (col. 6 lns. 42-44). It would have been obvious to a skilled person to use an amplifier in the optical network upstream of the Shiragaki fig. 5 device since it is well known that optical transmission

lines have non-zero attenuation and since it is desirable to compensate for such attenuation in order to maintain the optical signals at useful strengths.

Response to Arguments (September 16, 2007 response)

The Remarks allege that the number of space switching modules in Shiragaki was miscounted in the rejection. Apparently the rejection was not understood, so a crop from fig. 5 was added to the rejection above in an attempt to clarify what is being interpreted as a space switching module. The Remarks also argue that 571...571n should be regarded as the output ports of the Shiragaki device. This ignores the interpretation taken by the rejection. The output ports of the actual space cross-connect unit (SCCU), as interpreted by the rejection, are the collective outputs of all the space switching modules, i.e. $n \times m$ total outputs, since there are n space switching modules and each of those has m outputs as shown in fig. 5. The fact that a reference may disclose a device having more parts than claimed does not automatically mean that a subset of those parts cannot be taken as anticipating a claim. The extra parts 54i-j, 55i-j, 56i, and 57i in Shiragaki are not interpreted as belonging to the SCCU in the rejection.

The Remarks also question how the Shiragaki device could broadcast input signals independently of spectral considerations given that “Shiragaki requires wavelength selectors 531-1...53m-n” (Remarks at p. 9). However, the elements 53i-j are not wavelength selectors. The reference calls them “ $n \times 1$ optical selectors” and they are essentially $n \times 1$ switches (col. 11 lns. 8-9). They receive a number of wavelength multiplexed signals and export a chosen wavelength multiplexed signal (col. 11 lns. 57-59), and thus operate independently of wavelength. Note that the signal was already wavelength multiplexed (λ_1 - λ_m) when it entered at

one of the inputs **50i**. None of the elements **51i**, **52i-j**, or **53i-j** perform any kind of wavelength-dependent function such as wavelength multiplexing, wavelength demultiplexing, or wavelength conversion. Wavelength-dependent processing is not done by the Shiragaki device until a selected wavelength multiplexed signal is processed by a wavelength selection filter **54i-j** (col. 11 lns. 59-61). As explained above, elements **54i-j** are excluded from the interpretation of the SCCU in the rejection. Accordingly, the SCCU as interpreted in the rejection is still deemed to anticipate claim 1.

Allowable Subject Matter

Claims 5-9 and 13-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Allowable aspects of these claims were noted in a previous Office action. Claim 16 is allowed. Shiragaki does not disclose or suggest using fewer dividers than input ports in combination with all the other recited features.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Inquiries about this letter may be directed to examiner Stahl at the number below. Inquiries of a general or clerical nature (e.g., a request for a missing form or paper, etc.) should be directed to the technical support staff supervisor at 571-272-1626. Official correspondence which is eligible for submission by facsimile and which pertains to this application may be faxed to 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Questions about the Private PAIR system should be directed to the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mike Stahl *MJS*
2874
571-272-2360

November 25, 2007


Rodney Bovernick
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